

# A Wires-Easy-Arranged and Low-Cross-Talk Patch Panel

## FIELD OF THE INVENTION

5       The present invention relates to a patch panel, and more particularly to a patch panel having a wires-easy arranged and low-cross-talk patch panel thereon.

## BACKGROUND OF THE INVENTION

10       Following a trend of net communities and net office buildings, a machine room's setup is not as simple as before. Extranet cables of the machine room, such as 256Kbytes, 512Kbytes, T1 or T3, can be provided by ISP (Internet Service Provider), and then be separated as  
15       intranet cables to each home of the communities and to each company of the office building, and then finally separated to each room of the home and each seat of the office. Due to the home moving in the communities and the seat changing in the office, original intranet  
20       cables could be moved to new homes and seats, and IP addresses needn't to be reconfiging again. Therefore, how to smoothly arrange the original complex network cables and how to avoid cross-talk interference between network cables are the key points of net trend.  
25       By one way ago, just like a patch panel of Fig.1.

Using a cable split ring 62 on a back board 60 to arrange network cables 80. The direction of the cable split ring 62 is parallel to the patch panel. After cutting outer covering layer of the network cable 80, exposing  
5 network wires 82 and then putting the network cable 80 from upper to lower into the cable split ring 62, and finally embedding the network wires 82 into IDC set (Insulation Displaced Contact) 74 to let the network wires 82 electrically connect to IDC sets 74. And IDC  
10 sets 74 connect to jacks 72 electrically on a electric board (not shown). However, prior cable split rings 62 are fixed parallel to the direction of the patch panel. If network cables are come from the parallel direction of the patch panel, it will be inconvenient  
15 to arrange the network cables. Besides, the IDC sets 74 of prior patch panel is having eight ports in one line. After cutting the outer covering layer of the network cable 80, four sets of double twisted network wires must be separated and embedded into each port  
20 of IDC set 74 according to each network wire's color. Therefore, the double twisted network wires designed to prevent EMI are separated into two parallel wires with different lengths which result high cross-talk  
and lower telecommunication quality.

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## SUMMARY OF THE INVENTION

A primary object of the present invention is to provide a cable split ring which can be plugged horizontally and vertically into a patch panel to  
5 arrange network cables coming from horizontal and vertical direction and prevent the network cables from complicating twisted.

Another object of the present invention is to provide a double-lines IDC set which can reduce length  
10 differences of network wires to lower the effect of cross talk and improve communication quality.

To achieve the above objects, the wires-easy-arranged and low-cross-talk patch panel of the present invention mainly includes a panel with  
15 rotating holes which locate on each side of the panel; an electric circuit board mounted on the panel, which is structured a plurality of jacks and a plurality of IDC sets (Insulation Displaced Contact) ; a plurality of jacks separated into at least one set, which  
20 parallelly locate on the electric circuit board; a plurality of IDC sets separated into one upper and one lower sets, which parallelly locate on the electric circuit board and electrically connect with a plurality of jacks; a plurality of cable split rings with flexible  
25 holders plugged into the rotating holes; and a cover

with a plurality of windows ,which covers the electric circuit board and exposes the jacks and the IDC sets. After placing network cables into the cable split rings, then cutting the outer covering layer of the network cable to separate four sets of double twisted network wires and embed into upper and lower sets of IDC set according to each network wire's color. Therefore, the length differences of network wires embedded into IDC sets are not too large to result high cross-talk and effect telecommunication quality.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The structure and the technical means adopted by the present invention to achieve the above and other objects can be best understood by referring to the following detailed description of the preferred embodiments and the accompanying drawings, wherein

Fig. 1 is a perspective view of a patch panel according to the prior invention;

Fig. 2 is an exploded perspective view of a patch panel according to the present invention;

Fig. 3 is a perspective view of cable split rings placed on the present invention; and

Fig. 4 is a front view of a first embodiment of the present invention; and

Fig. 5 is a front view of a second embodiment of the present invention.

#### 10 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to Fig.2 illustrated the exploded perspective view of the present invention, a patch panel 100 has a back board 10 which has a fixed frame 12 and a hanging hole 14 on each side. The fixed frame 12 has a rotating hole 122, and the rotating hole 122 is a rectangular hole which can be embedded into a flexible holder 162 of a cable split ring 16. Through the hanging hole 14, the patch panel 100 can be fixed on a wall and an office's partition. The cable split ring 16 has a flexible holder 162 embedding into a rotating hole 122 vertically or horizontally, and then network cables are placed into a cable placer 166. The back board 10 is set a electric board (not shown) which is structured one line of jacks 42 and two lines of IDC set 44. The jacks 42 connect with IDC sets 44 by electrical circuits

on the electric board. The jacks 42 can be plugged by RJ-45. The network wires 52 in the network cables 50 can be embedded in the IDC set 44 separately and insulatively to let the network wires electrically connect with the IDC set 44. Because the IDC sets 44 connect the jacks 41 by electrical circuits, extra network cables could connect with intra network cables through IDC set 44 and jacks 42. A cover board 20 has jack windows 202 and IDC set windows 204. The cover board 20 covers the electrical board to make it pretty and keep from harmed, jacks 42 and IDC set 44 respectively expose the jack windows 202 and the IDC set windows 204. Besides, there is a protective cover 30 covering IDC set windows 204 to protect network wires, and jacks 42 are uncovered to make intranet jack easy to be plugged into the patch panel 100.

Referring to Fig.3 illustrated the cable split rings placed on the present invention, the flexible holders 162 of the cable split rings plug into the rotating holes 122 of the fixed frame 12 of the two sides of the backboard 10. A cover-board 20 covers the electrical board on the back board 10, and the jacks 42 and IDC-sets 44 are exposed, and then a protective-cover 30 covers IDC-sets 44.

Referring to Fig.4 illustrated the front view of a

first embodiment of the present invention, four sets of double twisted network wires (not shown) in each network cable 50 are separated into eight network wires 52, and each network wire 52 is embedded into IDC sets 44 respectively according to colors, and each IDC sets 44 is divided into one upper line and one lower line, and each line has four ports. The eight network wires 52 are plugged into the upper line and the lower line of IDC sets 44 respectively according to colors. Therefore, in one line, the length differences of the network wire plugged in the first left port and the one plugged in the first right port is not too large to result cross-talk.

Referring to Fig.5 illustrated a front view of the second embodiment of the present invention, which describes how the cable split ring 16 positioned vertically on the patch panel 100 arranges the network cables parallel to the patch panel 100. The network cable 50 are placed to the cable placer 166 from the side of the back board 10, and then the outer covering layer of the network cable 50 are cut. Then four sets of double twisted network wires 52 are embedded into the four ports of the upper line and those of the lower line of IDC sets 44 according to each network wire's color, and each jack 42 is responded to a IDC set 44.

Therefore, the network wires 52 in the external network cables 50 are plugged into the upper and the lower lines of IDC sets 44, and IDC sets 44 connect with jacks through electrical circuits on the electrical board, and then  
5 the external network cable 50 can connect with the internal network wires, such as RJ-45.

According to the present invention, each IDC set is divided into one upper and one lower lines with four ports to reduce the length difference of the network  
10 wires plugged in the first left port and the first right port to overcome the cross-talk. Furthermore, The cable split rings of the present invention can be rotated 90 degrees to conveniently arrange the network cables from vertical or parallel direction of the patch panel.  
15 The IDC sets can be divided into two or four lines, the position of the jacks can be above or below the IDC sets, or divided into two lines above and below the IDC sets according to actual electrical circuit board design.

20 A Wires-Easy-Arranged and Low-Cross-Talk Patch Panel is described above. Various details of the invention may be changed without departing from its scope. Furthermore, the foregoing description of the preferred embodiments of the invention and the best mode for  
25 practicing the invention are provided for the purpose



of illustration only and not for the purpose of  
limitation-the invention being defined by the claims.